COMMENTS

Claims 1-12 and 14-18 remain pending in the present application, Claim 13 having been canceled without prejudice or disclaimer.

In response to the Office Action mailed October 13, 2005, Applicants respectfully request the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following comments.

All Pending Claims Now Fully Comply With 35 U.S.C. § 112

Claim 13 stands rejected under 35 U.S.C. § 112, second paragraph, the Examiner maintaining that the language therein is indefinite as filed. However, solely in order to expedite prosecution of the present Application, Claim 13 has been canceled without prejudice or disclaimer. Thus, the present rejection is now moot. Applicants expressly reserve the right to further prosecute the original version of Claim 13 through continuation practice.

The Applied Combination of Tressel/Johnson Does Not Make Obvious Claims 1-10

Claims 1-10 stand rejected under 35 U.S.C. § 103(a) as being obvious over Tressel in view of Johnson. Applicants respectfully traverse the present rejection.

Tressel is directed to a method of bending pipes in which a pressurized liquid is maintained in the pipe during the bending process. As explained in Tressel, the process is carried out with the pressure of the liquid "close to the yield" stress of the material, and that the pressure is kept constant during the bending process.

However, Tressel fails to teach that the pressure of the liquid is changed as a function of the radius of curvature. Rather, Tressel only gives one example of the pressure used for a material with a 75,000 psi yield strength, as follows:

$$P = 2St/d = 2 \times 75{,}000 \times 0.017/0.500 = 5{,}100 \text{ psi}$$

Tressel, col. 3, l. 15. It is important to note that in the above formula from Tressel, "S" represents a characteristic of the material used, i.e., its yield strength, "t" is the thickness of the material, and "d" is the diameter of the pipe being bent. However, the radius of curvature of the bend, which Tressel indicates is 3 inches (Tressel, col. 3, lines 7-8), is not included in this formula for calculating the liquid pressure.

Tressel goes on to explain how, during the bending process, the pressure is maintained. Thus, nothing in Tressel teaches or suggests that the pressure should be calculated based on the radius of curvature to which the pipe shall be bent, nor that the pressure within the pipe should be changed in accordance with the radius of curvature.

Johnson does not rectify the failure of Tressel. Rather, as admitted by the Examiner, Johnson merely teaches that in a pipe bending process, the optimum amount of pressure varies depending on the **material** and the **thickness** of the tube. Comparing Johnson to the above-cited portion of the Tressel disclosure shows that Johnson does not teach that any additional parameters should be considered in determining the pressure to be used in the bending process.

It was the Examiner's position that it would be merely routine experimentation to find the optimum pressure for a pipe bending process in light of the Tressel and Johnson disclosures. Applicants respectfully disagree.

In reconsidering the present rejection, Applicants would like to respectfully request that the Examiner consider that the MPEP indicates that a "particular parameter **must first be recognized** as a **result-effective variable**, i.e., a variable which achieves a recognized result, **before** the determination of the optimum or workable ranges of said variable might be characterized as **routine experimentation**." MPEP 2144.05(II)(B) (emphasis added).

As noted above, nothing in the Tressel and Johnson references indicates that the ***radius of curvature*** to which the pipe will be bent has ***any*** affect on the calculation of the pressure used. Thus, Applicants submit that the ***radius of curvature*** is ***NOT*** recognized as a "result effective variable" in the cited prior art references.

In contrast, Claim 1 recites, among other recitations, "calculating a target pressure of the liquid as a function of the target radius wherein the target pressure is inversely related to the target radius, pressurizing the liquid to a pressure substantially equal to the target pressure, and manipulating the pipe to form a bend having a radius substantially equal to the target radius."

Additionally, Claim 6 recites, among other recitations, "calculating a first target pressure of the liquid for the first bend as a function of the first radius and calculating a second target pressure of the liquid for the second bend as a function of the second radius wherein, if the second target radius is less than the first target radius, the second target pressure is greater than the first target pressure and, if the second target radius is greater

than the first target radius, the second target pressure is less than the target pressure of the first bend, pressurizing the liquid to a pressure substantially equal to the first target pressure and manipulating the pipe to form a first bend having a radius substantially equal to the first target radius, pressurizing the liquid to a pressure substantially equal to the second target pressure and manipulating the pipe to form a second bend having a radius substantially equal to the second target radius."

Both of these claims refer to the concept that the pressure used has an inverse relationship to the radius of curvature to which the pipe will be bent. As noted above, nothing in the cited references teaches or suggests that there should be ***any*** relationship between the radius of curvature and the pressure used, and thus, the radius of curvature is not a result effective variable.

Applicants therefore submit that Claims 1 and 6 cannot be rejected as merely reciting optimization through routine experimentation. Thus, Applicants submit that Claims 1 and 6 clearly and non-obviously define over the cited references. Additionally, Applicants submit that Claims 2-5 and 7-10 also define over the cited references, not only because they depend from one of Claims 1 or 6, but also on their own merit.

The Applied Combination of Tressel/Johnson/Crippa Does Not Make Obvious Claims 15-18

Claims 15-18 stand rejected under 35 U.S.C. § 103(a) as being obvious over Tressel in view of Johnson and in further view of Crippa. Applicants respectfully traverse the present rejection.

Tressel and Johnson are discussed above. With regard to the present rejection, it was the Exmainer's position that the Crippa reference teaches machines with multiple roll dies. However, nothing in the Crippa reference rectifies the failures of Tressel and Johnson to teach or suggest that radius of curvature is a result effective variable for determining the pressure to be used in a pipe bending process.

In contrast, and similarly to Claims 1 and 6, Claim 15 recites, among other recitations, "the pipe bending mechanism including a first roll die having a first radius and a second roll die having a second radius smaller than the first radius . . . wherein the target liquid pressure is greater for the second roll die than for the first roll die."

Similarly to Claims 1 and 6, Claim 15 refers to the inverse relationship between radius of curvature and pressure. Thus, Applicants submit that Claim 15 is not the result of routine experimentation, and thus, Claim 15 clearly and non-obviously defines over the

cited references. Additionally, Applicants submit that Claims 16-18 also define over the cited references, not only because they depend from Claim 15, but also on their own merit.

CONCLUSION

For the foregoing reasons, it is respectfully submitted that the rejections set forth in the outstanding Office Action are inapplicable to the present claims. Accordingly, early issuance of a Notice of Allowance is most earnestly solicited.

The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicants' attorney in order to resolve such issue promptly.

Respectfully submitted,

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